RocketRAID 2680 SAS Controller

FreeBSD Installation Guide

Version 1.0

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1 Overview

The purpose of this document is to provide clear instructions on how to install and use RocketRAID 2680 Controller on a FreeBSD system.

2 Installing FreeBSD on RocketRAID 2680 Controller

If you would like to install FreeBSD onto drives attached to RocketRAID 2680 controller, please perform the following operations:

Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to RR2680 controller, you can use RR2680 BIOS Setting Utility to configure your hard disks as RAID arrays, or just use them as single disks.

Note

If you have other SCSI adapters installed, you must make sure the RR2680 controller BIOS will be loaded firstly. If not, try to move it to another PCI slot. Otherwise you may be unable to boot up your system.

Step 2 Check System BIOS Settings

In your system BIOS SETUP menu, change **Boot Sequence** in such a way that the system will first boot from CDROM, next from and then from floppy drive, and then from SCSI. Refer to your BIOS manual to see how to set boot sequence.

If your BIOS settings do not support such a boot sequence, you can first set it to boot from CDROM. After you finish installation, set SCSI as the first boot device to boot up the system.

Step 3 Prepare the Driver Diskette

If you are installing FreeBSD, you must prepare a driver disk for RR2680 before installation.

First obtain the driver diskette tgz file, freebsd.tgz.

On a DOS or Windows system, create a MS-DOS filesystem and extract the archive file to the (USB) floppy diskette or USB hard disk.

On a FreeBSD system,

#newfs_msdos /dev/fd0

#mount –t msdosfs /dev/fd0 /mnt

#tar xxx.tgz –C /mnt

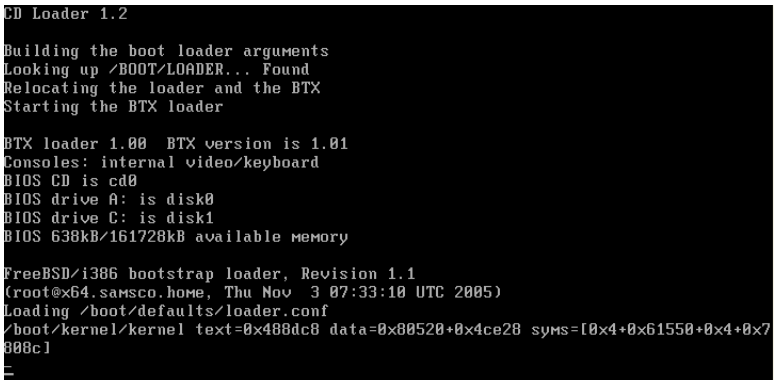
#umount /mnt

Note

If the floppy diskette is inserted into an USB floppy controller and the device name in the system is da0, then replace **fd0** in the upper command with **da0**. The driver also could be put on a USB disk, and the driver disk can be created as the floppy diskette. For example: use the first partition of the USB disk **da1**, then replace **fd0** in the upper command with **da1s1** or **da1**.

Step 4 Install FreeBSD

1) Start installing the FreeBSD by booting from installation CD.


CD Loader 1.2
Building the boot loader arguments
Looking up /BOOT/LOADER... Found
Relocating the loader and the BTX
Starting the BTX loader
BTX loader 1.00 BTX version is 1.01
Consoles: internal video/keyboard
BIOS CD is cd0
BIOS drive A: is disk0
BIOS drive C: is disk1
BIOS 638kB/161728kB available memory
FreeBSD/i386 bootstrap loader, Revision 1.1
(root@x64.samsco.home, Thu Nov 3 07:33:10 UTC 2005)
Loading /boot/defaults/loader.conf
/boot/kernel/kernel text=0x488dc8 data=0x80520+0x4ce28 syms=[0x4+0x61550+0x4+0x7
808c]

2) When "**Welcome to FreeBSD**" screen appears, select "**6**".

Welcome to FreeBSD!
1. Boot FreeBSD [default]
2. Boot FreeBSD with ACPI disabled
3. Boot FreeBSD in Safe Mode
4. Boot FreeBSD in single user mode
5. Boot FreeBSD with verbose logging
6. Escape to loader prompt
7. Reboot
Select option, [Enter] for default
or [Space] to pause timer 9
Type '?' for a list of commands, 'help' for more detailed help.
OK

3) Insert RR2680 driver diskette into floppy drive now. Type in "**load diskx:rr2680-x.x**" (without quotation mark) and then press **enter**.

Welcome to FreeBSD!
1. Boot FreeBSD [default]
2. Boot FreeBSD with ACPI disabled
3. Boot FreeBSD in Safe Mode
4. Boot FreeBSD in single user mode
5. Boot FreeBSD with verbose logging
6. Escape to loader prompt
7. Boot FreeBSD with USB keyboard
8. Reboot
Select option, [Enter] for default
or [Space] to pause timer 10
Type '?' for a list of commands, 'help' for more detailed help.
OK load disk0:rr2680-7.0.ko_

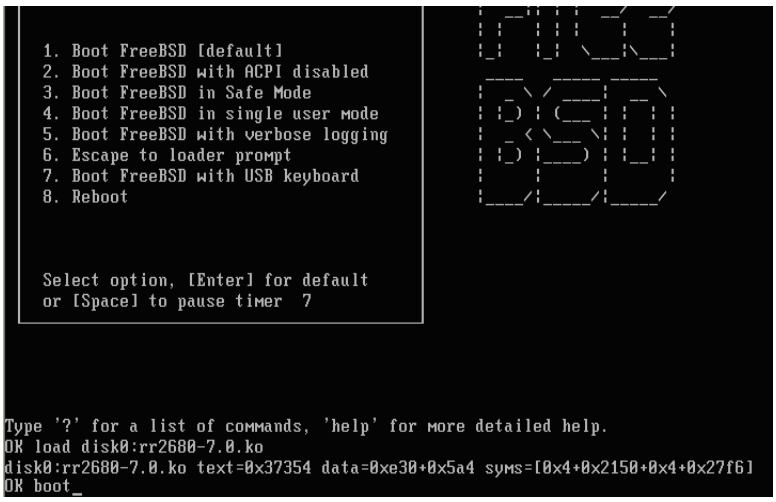
If using USB disk, insert it into the USB port. Assume the USB disk's name is disk1 and driver modules are located at the first partition of disk1 in system, then type in "**load disk1s1:rr2680-x.x**" (without quotation mark). If whole USB disk is formatted as one partition, i.e. format the USB disk directly without partitioned, type in "**load disk1:rr2680-x.x**" (without quotation mark) and then press **enter**.
To confirm USB disk name, type **lsdev** command.

In the following document we assume the driver diskette is inserted into the on-board's floppy controller.

```
for FreeBSD 6.0-RELEASE
  ok load disk0:rr2680-6.0.ko

for FreeBSD 6.0-AMD64-RELEASE
  ok load disk0:rr2680-6.0-amd64.ko

for FreeBSD 6.1-RELEASE
  ok load disk0:rr2680-6.1.ko

for FreeBSD 6.1-AMD64-RELEASE
  ok load disk0:rr2680-6.1-amd64.ko

for FreeBSD 6.2-RELEASE
  ok load disk0:rr2680-6.2.ko

for FreeBSD 6.2-AMD64-RELEASE
  ok load disk0:rr2680-6.2-amd64.ko

for FreeBSD 6.3-RELEASE
  ok load disk0:rr2680-6.3.ko

for FreeBSD 6.3-AMD64-RELEASE
  ok load disk0:rr2680-6.3-amd64.ko

for FreeBSD 7.0-RELEASE
  ok load disk0:rr2680-7.0.ko

for FreeBSD 7.0-AMD64-RELEASE
  ok load disk0:rr2680-7.0-amd64.ko
```

4) After the driver has been loaded, remove the floppy diskette from the (USB) floppy drive or remove USB disk from USB port.

5) Type in "boot" and continue the installation as normal. You can refer to FreeBSD installation guide.


1. Boot FreeBSD [default]
2. Boot FreeBSD with ACPI disabled
3. Boot FreeBSD in Safe Mode
4. Boot FreeBSD in single user mode
5. Boot FreeBSD with verbose logging
6. Escape to loader prompt
7. Boot FreeBSD with USB keyboard
8. Reboot
Select option, [Enter] for default
or [Space] to pause timer 7
Type '?' for a list of commands, 'help' for more detailed help.
OK load disk0:rr2680-7.0.ko
disk0:rr2680-7.0.ko text=0x37354 data=0xe30+0x5a4 syms=[0x4+0x2150+0x4+0x27f6]
OK boot_

Note

On some systems with ACPI enabled, FreeBSD may not work. You can try to disable ACPI in system BIOS or type the command "**`set hint.acpi.0.disabled="1"`**" under boot prompt to solve the problem.

6) Before exit install, insert floppy driver diskette into (USB) floppy drive, or insert USB driver disk into USB port, then an additional step must be taken to copy RR2680 driver module to system. On the driver disk, there is a setup script "**postinstall**" which will do this work for you. Before you reboot the system, press **Alt-F4** to the command shell and type the following commands:

For common ISA floppy controller:

```
# mount -t msdosfs /dev/fd0 /mnt
```

For USB floppy controller, we assume it is da0:

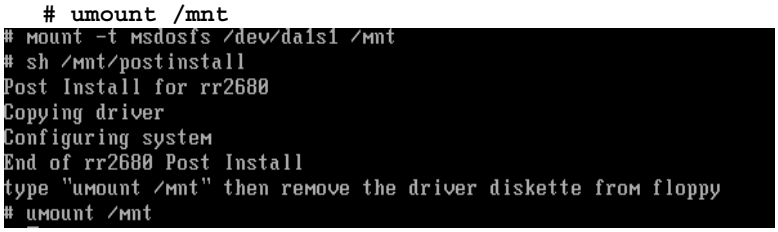
```
# mount -t msdosfs /dev/da0 /mnt
```

For USB disk, we assume it is da1:

```
# mount -t msdosfs /dev/da1 /mnt
or
# mount -t msdosfs /dev/da1s1 /mnt
```

Then run script to do postinstall

```
# sh /mnt/postinstall
# umount /mnt
```


mount -t msdosfs /dev/da1s1 /mnt
sh /mnt/postinstall
Post Install for rr2680
Copying driver
Configuring system
End of rr2680 Post Install
type "umount /mnt" then remove the driver diskette from floppy
umount /mnt

Then press **Alt-F1** to return to the setup screen and choose **[X Exit Install]** to finish setup.

Note

After the driver has been loaded, remove the floppy diskette from (USB) floppy drive or remove USB disk from USB port to avoid that the installed system does not boot normally.

Note

On some systems the floppy may be inaccessible during installation. In this case, please remove the CD, reboot from the installed system and load the driver manually from floppy again when booting from controller. After system boots up you can run the postinstall script to install the driver.

3 Installing RR2680 Driver on an Existing System

If you are currently running FreeBSD and would like to access drives or arrays attached to the RR2680 Controller, you can perform the following steps.

Step 1 Copy the Driver Module

If you have made freebsd drivers into a diskette, you can insert the driver diskette to floppy drive, then using the following commands to copy the driver module:

```
for FreeBSD 6.x/7.x:
  # mount -o ro /dev/fd0 /mnt
  # cp /mnt/rr2680-xxx.ko /boot/kernel/rr2680.ko
  # umount /mnt
```

You can also extract the files from .tgz files directly, without using a floppy diskette:

```
For FreeBSD 6.x/7.x:
 # tar zxvf xxx.tgz
 # cp rr2680-xxx.ko /boot/kernel/rr2680.ko
```

Step 2 Test the Driver Module

You can test out the module to ensure that it works for your system by load it during system booting.

If the module has been loaded successfully you should see the RR2680 banner and a display screen of the attached drives. You can now access the drives as a SCSI device (if you have no other SCSI device, the first device is /dev/da0, then /dev/da1, etc.).

If you have configured a RAID using all disks, it will be registered to system as device **/dev/da0**. You can use "**/stand/sysinstall**" to create partitions and disklabels *(like da0s1e)* on **da0**. Then you can create new filesystem using "**newfs /dev/da0s1e**". Now you can mount **/dev/da0s1e** to somewhere to access it.

Step 3 Configure System to Automatically Load the Driver

Most likely, you will not want to type "load rr2680" each time you boot up the system. Therefore you must install the module and tell the system about it. To configure system to automatically load the driver, type in the following commands:

```
# echo 'rr2680_load="YES"' >> /boot/defaults/loader.conf
```

This tells the loader to try loading the RR2680 module together with the kernel.

Now, reboot the system. RR2680 module should be automatically loaded each time

system start up.

Step 4 Configure System to Mount Volumes when Startup

Now you can inform the system to automatically mount the array by modifying the file /etc/fstab. E.g. You can add the following line to tell the system to mount /dev/da1s1e to location /mnt/hpt after startup:

/dev/da1s1e /mnt/hpt ufs rw 0 0

4 Updating the Driver

To update the driver with a new version you simply reinstall the driver following the previous section, “Install the driver on an existing system”.

5 Installing RAID Management Software

HighPoint RAID Management Software is used to configure and keep track of your hard disks and RAID arrays attached to RR2680 controller. Installation of the management software is optional but recommended.

To configure HighPoint RAID Management Software to work with RR2680 driver, you should setup /etc/hptcfg to be the driver name:

 # echo rr2680 > /etc/hptcfg

Please refer to HighPoint RAID Management Software documents for more information.

6 Uninstalling

You can only uninstall the driver when your system is not booting from devices attached to RR2680 controller. Just remove the line

rr2680_load=”YES”

in /boot/defaults/loader.conf, and then delete the driver module **/modules/rr2680.ko** or **/boot/kernel/rr2680.ko** .